Historic Natural Events.

Dec. 7, 1663. High Tide.—Pepys records that "last night was the greatest tide ever known in the Thames; all Whitehall was drowned".

Dec. 7, 1873. "Cattle-Show" Fog.—During the whole of the week beginning Dec. 7, the British Isles were under the influence of an anticyclone. Hard frosts and dense fogs occurred over the whole country. In London the fog was continuous throughout the week, which was that of the annual Cattle Show, and caused great inconvenience. It was followed by a great increase in the number of deaths from respiratory diseases.

Dec. 7, 1879. Great Cold in Central Europe.—December 1879 was the coldest month of the century in France and central Europe. The frost began on Nov. 22–25, and reached its greatest intensity on Dec. 7, when it extended over France, Switzerland, Italy, and even northern Africa, for snow fell in Tunis. At Montsouris, Paris, a temperature of −11° F. was recorded in the shade, and farther east, at Langres, −22° F. In Paris there were 75 days of frost, 33 in succession, and in France 50 persons died of cold. The Seine, Yonne, and Loire were frozen. There was heavy snow in Paris. The Dutch waterways were frozen for 54 days. On Dec. 8 the Zuider Zee became an ice lake. By way of contrast, the winter was not cold in Russia. A second period of cold came at the end of January, but February was very warm. The beginning of December was very cold in England and Scotland (see Dec. 4), but afterwards the cold was not excessive and the Thames was not frozen over.

Dec. 8-9, 1886. Storm and Low Barometer over Eastern Atlantic.—This storm was notable for its great extent, the low barometer in its centre, its duration, and the violence of its winds. It appeared off the west of Ireland on the evening of Dec. 7 and travelled due eastwards across the south of England. At Belfast on the afternoon of Dec. 8 the barometer fell to 27·38 inches (927·2 mb.), The average wind velocity reached 80 miles per hour at Fleetwood from 8.30 to 9.30 A.M. on Dec. 9, and exceeded 70 miles per hour from 8 A.M. to 4 P.M. The gale extended over the whole area from Stornoway to Corunna, more than 1100 miles. A sharp squall with thunder, lightning, and hail passed over London at 9 A.M. on Dec. 8. On the coasts no fewer than 217 vessels were recorded as lost or damaged, while two lifeboats were capsized near Fleetwood, with the loss of 27 lives.

Dec. 9-11, 1671. Glazed Frost in Somerset.—Although there was no ice on any water, the rain of these days in Somerset froze as it fell. An ash branch weighing three-quarters of a pound had 16 pounds of ice on it, the ice being five inches in circumference. Vast numbers of trees were destroyed by the weight of the ice.

Dec. 10, 1149. Severe Winter in England.—The winter of 1149–50 was very severe in England and the Netherlands. The Thames was frozen from Dec. 10 until Feb. 19, and was used as a highway for carriages and horses. The sea off Holland was frozen three miles from the shore. The winter caused a severe famine, and the whole year was very unfavourable.

Dec. 12, 1901. Snowstorm over England.—A deep barometric depression travelled eastward along the English Channel on Dec. 12–14, and during these three days strong north-easterly winds prevailed over the British Isles, while a violent snowstorm raged over most of England, especially the north Midlands. Enormous damage was done to telegraph wires, the north of England being isolated from London, while railway traffic was completely disorganised. Great drifts were formed in hilly districts, blocking roads and causing the loss of many sheep.

Dec. 13, 1795. Meteorite.—The controversy as to whether so-called 'thunder-bolts' ever actually fell from the sky was ended in 1795, when an aerolite was observed to fall on Dec. 13 at Wold Cottage, Thwing, near Scarborough. This aerolite, which weighs 56 lb., is now in the British Museum (Natural History).

Societies and Academies.

LONDON.

Mineralogical Society, Nov. 4.—Arthur Russell: An account of British mineral collectors and dealers in the seventeenth, eighteenth, and nineteenth centuries. A first instalment of a series of short biographies dealing with:—Nehemiah Grew, F.R.S. (1641–1712), William Borlase, F.R.S. (1696–1772); Rudolf Erich Raspe (1737–1794); and Philip Rashleigh, F.R.S. (1729–1811).—**M. H. Hey:** On cupriferous melanterite from the Skouriotissa mine, Cyprus. A crystallographic study of a well crystallised specimen from an ancient working (perhaps Roman) in the Skouriotissa mine, revealed a very peculiar habit tabular to $b(010)$, and the presence of the new forms $x(161)$, $y(231)$, $g(\bar{1}12)$, $q(\bar{1}02)$, and $\beta(150)$. A partial analysis shows the presence of 7·7 per cent $CuSO_4,7H_2O$.—**C. E. Tilley:** On the dolerite-chalk contact-zone of Scawt Hill, Co. Antrim. The production of basic alkali rocks by the assimilation of limestone by basaltic magma. (With chemical analyses by **H. F. Harwood**): Assimilation of limestone at the contact of a dolerite intrusion with the chalk at Scawt Hill gives rise to a hybrid zone built up of pyroxene-rich rocks (pyroxenites), titanaugite-melilite rocks, and basic rock-types bearing nepheline (theralite and nepheline-dolerite assemblages). The segregation of a basic alkali residuum is the complementary process in the precipitation of magnesia-rich pyroxene in the pyroxenites. Plagioclase is resorbed and gives place to a titaniferous lime-augite rich in alumina, melilite, and nepheline, while perovskite, aegirine, and wollastonite are other products in the hybrid zone.—**Frank Smithson:** A simple method of observing the magnetic properties of mineral grains. The tests are made with softened steel needles attached to the poles of a horse-shoe magnet, a strong field being obtained when the points are 1 mm. or so apart. The attraction is observed under the microscope.—**M. H. Hey:** On studies of the zeolites (1). General review. A short review of the general properties of the zeolites, with some suggestions on the interpretation of the available data, and a comparison of the zeolites with the clays, ultramarines, permutites, and 'artificial zeolites'.

Royal Meteorological Society, Nov. 19.—J. Edmund Clark, I. D. Margery, R. Marshall, and C. J. P. Cave: Report on the phenological observations in the British Isles, December 1928 to November 1929. A year of extreme conditions resulted in average results for 1929. Winter migrants, such as fieldfares and redwings, fled from usual haunts to avoid the cold, but reappeared as welcome guests in south Ireland and south-west England. Sharp spells of cold in April, May, and June neutralised the alarming number of queen wasps. In the table of flowering dates, all are late in England and Wales, though decreasingly so: from 17 to 14 days for the hazel and coltsfoot in February, to 1 and 2 days for the devil's bit scabious and ivy in early August and late September. That the determining factor was cold of continental type

spreading exceptionally in proportion to propinquity is well shown by the district values. Our earliest bird record, the song of the thrush, and the honey bee date for insects, tell the same tale. The exceptional nature of the March warmth and sunshine is best illustrated by the insects: on the average the queen wasp appears two days after blackthorn blooms; in 1929 ten days earlier. It was more than a month early in Scotland W., and the orange tip butterfly nearly as much in Scotland E. The year's results in farm and garden as to quantity and quality showed a small balance on the credit side, due chiefly to the superb September. But to drought in the south-east was due a shortage of hay and straw, while in the far north, late comparatively in its harvest-time, the October deluge played sad havoc.—**A. V. Williamson** and **K. G. T. Clark**: The variability of the annual rainfall of India. Variability is defined as the percentage departure—irrespective of sign—from normal annual rainfall which has occurred at a given station in half the years of the period 1890–1923. Two generalisations are submitted: (1) the lower the rainfall the greater variability tends to be; (2) rainfall is less reliable when it is characteristically concentrated than when it is well distributed in time. A map of India divided into zones by means of "lines of equal-variability" has been prepared.

PARIS.

Academy of Sciences, Nov. 3.—**Bigourdan**: The Technological Institute of I. Porro. Historical account of the astronomical equipment of this observatory.—**E. L. Bouvier**: The systematics of the Saturnioides of the family of Hemileuca.—**Georges Claude**: The utilisation of the thermal energy of the sea. An account of the laying an iron tube, 2 km. in length, in the Bay of Matanzas, for the purpose of extracting cold water from the sea floor, to be utilised by the Claude-Boucherot plan.—**C. Camichel, J. Leclerc du Sablon**, and **L. Escande**: Experiments on the pipes supplying water to the Miègebat power station.—**N. Achieser**: The polynomials of Tchebyscheff for two segments.—**Henri Dumas**: The generalisation of a theorem of Mandelbrojt.—**Mandelbrojt**: Some theorems on holomorph analytical functions limited in an infinite region.—**Jean Chazy**: The velocity of propagation of the Newtonian attraction.—**G. Wataghin**: The relations of indetermination in the theory of quanta.—**L. Goldstein**: The distribution of the electrons in the atom.—**Pan-Tcheng Kao**: The vibrations of piezoelectric quartz along the optic axis. Quartz possesses three fundamental frequencies related to the three axes, and this is not in contradiction with Curie's law.—**A. Dargenton**: The refraction of pencils of right lines.—**A. Couder**: Spectrograph with a non-inclined plate.—**R. Tréhin**: The absorption of aqueous solutions of hydrochloric acid in the ultra-violet.—**R. Zouckermann**: The phosphorescence phenomena presented by fused silica discharge tubes. The phenomena described are analogous with those described by Curie as resulting from the action of radium rays on various substances and by Wiedemann and Schmidt when studying the action of the cathode rays.—**J. Giuntini**: The compounds of tartaric acid and copper. Solutions of the copper tartrates were prepared by dissolving increasing proportions of precipitated copper hydroxide in tartaric acid and these were examined for rotatory power and dichroism. The discussion of the data from the point of view of formation of definite compounds is reserved for a later communication.—**E. Darmois** and **Jean Pierre Pérez**: The variation of the rotatory power of the camphorsulphonates in the presence of neutral salts.—**Jean Becquerel** and **W. J. de Haas**: The paramagnetic rotatory power of crystals of xenotime at very low temperatures and on the paramagnetic saturation. The temperatures were taken down to 4·2° abs. (liquid helium) with a magnetic field of 27,000 gauss. Under these conditions the paramagnetic saturation is almost complete. Curves have been obtained representing the rotations as functions of H/T, where H is the magnetic field and T the absolute temperature.—**H. A. Kramers**: Paramagnetic rotation in uniaxial crystals of the rare earths.—**Desmaroux** and **M. Mathieu**: The X-ray study of the gelatinisation of nitrocellulose.—**A. Kling** and **A. Lassieur**: The hydrogen exponent (pH) of water. In two earlier communications the authors have found by two independent methods a value 5·8 for the pH of water. This figure has been criticised on the ground that the experiments may have been vitiated by the presence of a trace of carbon dioxide in solution. An experiment is described in which the water used was directly distilled from a platinum vessel after addition of caustic soda, the distillation being carried out in a current of pure hydrogen. This water again gave a pH of 5·8 by a zero electrometric method, confirming the previous results.—**Al. Yakimach**: A complex compound of quadrivalent vanadium cyanide. The preparation of the compound $K_2V(CN)_6$ is described.—**Joseph Robin**: The migration of the amino groups in the arylamines derived from the diarylarylethinylcarbinols. The constitution of the compounds obtained.—**Paul Bruère**: The colorimetric micro-reactions of the glutenogen proteids and of the cellulose gels of the wheat grain.—**J. Beauverie** and **J. Treyve**: The survival and development of green plants during periods up to nearly two years in hermetically closed receivers.—**Fontaine**: The parallelism existing in fish between their resistance to variations of salinity and the independence of their interior medium.—**H. Laugier** and **Mlle. L. Lubinska**: Reflex excitability and refractory phenomena in the nerve centres.—**Georges Blanc** and **J. Caminopetros**: The sensibility of *Citillus citillus* to the Mediterranean kala-azar. This marmot is so sensitive to kala-azar infection that it is undoubtedly the best experimental animal for the study of this disease and its mode of transmission.—**J. Magrou** and **Mme. Magrou**: Action at a distance and the development of the egg of the sea urchin. New experiments.

LENINGRAD.

Academy of Sciences, *Comptes rendus*, No. 15, 1930.—**V. Ipatjev**: Cellulose from sugar. An analysis of the cellulose obtained by Prof. E. Schmidt, Munich, from monosaccharides.—**A. Čičibabin**: Acids in Baku petroleum.—**A. Karpinskij**: (1) Studies of problematic objects and phenomena: a study of the remnants of *Helicoprion*.—(2) A problematic fossil from the Palæozoic deposits of the northern Urals. A description and discussion of *Proamphibia problematica*, represented by a fossilised scaly skin.—(3) Grey cast-iron resembling in structure a piece of wood. Chemical, metallographic, and microscopic analyses of an object found in a furnace and representing a piece of cast-iron, with all the details of structure of wood.—**V. Chlopin** and **B. A. Nikitin**: The radium content of the petroliferous waters of the Grozny area. The concentration of radium in some samples was very high, namely, 1/28, 3/28, and 1/31.—**V. Vernadskij**: Radioactivity of petroliferous waters. The concentration of radium in natural waters must be connected with some biological processes on the surface of the earth.—**A. Grosse**: The X-ray spectrum of the element 91, ekatantalium (1), Series L.—**G. Pfeiffer**: A generalisation of Jacobi's method of the integration of complete systems of linear homogeneous equations.